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To: Biosolids Environmental Work Group
From: Henry J. Staudinger, Citizens' Representative
Re: Failure to Enforce Biosolids Regulations
Date: October 24, 2007

By memo dated October 10, 2007, I urged the initiation of an information collection process that would enable the Panel to address biosolids issues in the context of the actual biosolids policies and practices. During the October 16, 2007, meeting of the Work Group, I was asked to address in more detail one of those practices – lack of enforcement, and more specifically whether lack of enforcement might continue following transfer of authority to DEQ.

For purpose of this response, I have elected to address the lack of enforcement of nutrient restrictions. This subject was selected because the lack of enforcement is readily demonstrated in reports in VDH files that were prepared by sludge Applicators and can be readily accessed by any panel member; because the violations continue unabated despites many requests of citizens that action be taken; and because there are demonstrable reasons for citizen concern that those violations will continue following transfer of the regulations to DEQ.

This response is based on my own information gathering of more than a decade, and presented in the context of my own unsuccessful efforts to convince permitting agencies and Applicators to end the reported violations (through voluntary compliance and/or enforcement action) and the responses that have been given for ongoing noncompliance.

1. **Ongoing biosolids practices that result in nitrogen applications in excess of the amount required for crop growth (agronomic rate) in violation EPA and Virginia biosolids regulations**

EPA promoted land application of biosolids as the recycling of nutrients. One of the 503 restrictions was to limit the amount of applied nitrogen to crop needs (agronomic rate). This restriction was good recycling and protected water quality. VDH and DEQ included the nitrogen restriction in their own regulations. In the case of VDH, 12 VAC 50-585-550(A) reads:

> "The primary agronomic value of biosolids, the nutrient content, shall be established prior to agricultural use. **The applied nitrogen and phosphorous content of biosolids shall be limited to amounts established to support crop growth**…." (Emphasis Added.)

During my research, I was able to confirm through experts at Virginia Tech and DCR that in order for crops to uptake nitrogen in amounts established to support crop growth, specific amounts of potassium must be present. Unfortunately the amount of potassium present in biosolids is often far less than needed to enable crops to uptake nitrogen needs, requiring shortfalls to be supplemented in order to comply with the nitrogen agronomic rate restriction.

In order to demonstrate compliance with applicable regulations, Applicators are required to submit reports that set forth crop nutrient requirements as well as the amounts of nutrients supplied by biosolids and any supplementary source. This allows VDH to determine compliance simply by reviewing those reports. The following chart summarizing reported information found in VDH files is illustrative of information reported by Applicators and/or derived from the reported information.

Sample Nutrient Balance Sheet Information
2001 Crop Needs and Year to Date Biosolids Applications

Permitted Site	Field	Year to Date	Crop	**Crop Needs** Soil Test N/P205/K20			Biosolids Supplied N/P205/K20			From Other Sources N/P205/K20	Balance Needed from Fertilizer N/P205/K20		
Garland	1A	1-Mar	Pasture	120	0	80	111	89	23	20/0/0	9	**(129)**	**57**
Davis	10B	1-Mar	corn grain	160	0	40	115	89	23	0/0/0	25	**(129)**	**37**
Cutrell	7	1-May	corn grain	180	0	40	105	252	13	20/0/0	70	**(252)**	**27**
Carlton	2	1-May	corn grain	160	0	60	141	205	13	0/0/0	39	**(205)**	**47**
Carnes	1	9-Jul	Tallgrass Hay	200	0	95	126	520	13	12/0/0	62	**(520)**	**82**
Sanderson	2	9-Jul	Tallgrass Hay	200	0	110	112	476	12	35/0/0	53	**(476)**	**98**
Sanderson	4	9-Jul	Tallgrass Hay	250	0	220	126	546	13	47/0/0	77	**(546)**	**207**
Sanderson	5	9-Jul	Tallgrass Hay	200	0	55	101	419	11	28/0/0	71	**(419)**	**44**
Sanderson	6	9-Jul	Tallgrass Hay	200	0	55	109	472	11	36/0/0	55	**(472)**	**44**
Sanderson	1	9-Jul	Tallgrass Hay	250	50	200	148	633	15	34/0/0	68	**(583)**	**185**
Sanderson	3	9-Jul	Tallgrass Hay	250	40	105	105	457	11	43/0/0	52	**(417)**	**99**

In the examples cited above, it is clear from the Applicator's Reports that there were potassium shortages on every site and they were not supplemented. It is also clear from the Reports that the applications on Field 7 independently exceeded nitrogen restrictions.

VDH has never explained why it has refused to address these violations. Applicators have defended their noncompliance by arguing that it was really the responsibility of the farmers to supplement potassium shortages, and that it was not good business practice to insist that farmers supplement the potassium shortage because farmers would insist that the Applicators pay the cost to supplement potassium shortfalls. However, in order to lawfully apply biosolids Applicators must ensure that no such shortfall exists.

There is a real concern on the part of the public that these violations will be allowed to continue following the transfer of authority to DEQ. That concern is based in part on the refusal of DEQ to enforce similar violations based on Applicator Reports in DEQ files. Indeed, the concern is

even greater in the case of DEQ because when confronted with the same documented violations, DEQ simply eliminated reporting requirements for potassium, erroneously arguing that DEQ was not required to address potassium.

Citizens have considered the possibility that these violations might cease as a result of DCR's new nutrient management regulations. However, because the applications already violate both state and federal regulations, citizens find it difficult to believe that another law that provides no additional penalties against Applicators and no further enforcement assurances, will result in a change without a clear enforcement commitment from DEQ.

2. **Ongoing biosolids practices that result in phosphorous applications in excess of the amount required for crop growth (agronomic rate) in violation of VDH biosolids regulations**

During my initial investigation of land application of sludge, I was struck by the dumping of large amounts of phosphorus when the soil tests indicated no phosphorous was needed for crop growth (applications of as much as 1,200 lb/acre were found). A decade ago I pointed this out in a meeting with Greg Evanylo and Bobbie Clark (Shenandoah County Extension Agent), and urged them to step forward and help put an end to this practice.

I expected support for good recycling, i.e., application of only amounts needed for crop growth. Instead, I was told that it was unnecessary to address excessive phosphorous applications because phosphorous bound tightly to the soil, and thus was not a source of water pollution. Although this was contrary to articles I had read, I did not then have sufficient information to seriously challenge the claim. Ultimately I realized that the response was based on outdated science; and explained why 503 did not include phosphorous restrictions. VDH did not make that same mistake in 12 VAC 50-585-550(A).

Over the objections of citizens, VDH continued to allow excessive amounts of phosphorous to be dumped on permitted sites by refusing to enforce the limitations set forth in 12 VAC 50-585-550 (A). In the Sample Nutrient Balance Sheet Information taken from VDH files, it is clear that no sludge should have been applied on the first 9 sites because no phosphorous was needed for crop growth, and excessive amounts of phosphorous was applied on the remaining sites.

A variety of excuses have been advanced for not enforcing this requirement. They include: (1) Enforcement would cost the sludge industry money to comply (hardly a reason for allowing persistent ongoing violations); (2) It was impossible to determine crop phosphorous needs (not according to Virginia Tech and others); (3) I couldn't scientifically document that the phosphorus harmed water quality (an inappropriate reason for not enforcing regulations); (4) That the language in 12 VAC 50-585-550(A) did not mean what it says (even though the language is unambiguous); (5) and animal manures may be even more harmful (i.e., it is ok to ignore the violations because others may be causing phosphorous pollution).

There is a special concern on the part of the public that these violations will be allowed to continue following the transfer of authority to DEQ. That concern is based in part on the fact that

DEQ allows phosphorous applications far in excess of agronomic rates; and in part on the fact that DEQ never adopted regulations limiting phosphorous applications to crop requirements.

Citizens have considered the possibility that these violations might cease as a result of DCR's new nutrient management regulations. However, because the applications already violate biosolids regulations, citizens find it difficult to believe that another law that provides no additional penalties against Applicators and no further enforcement assurances, will result in a change without a clear enforcement commitment from DEQ.

Conclusion

Based on past policies and practices of both VDH and DEQ, there is a real concern that unless there is a commitment on the part of DEQ to enforce the nutrient restrictions, violations will continue unabated following transfer of the regulations.

I trust that this short memo will help the panel understand the frustrations of the public in dealing with permitting agencies, and the need for the panel to elicit from VDH and DEQ the kind of information set forth in my earlier memo. If further clarification is needed, please let me know.